

SUPPLEMENTAL CROP REQUIREMENT AND WITHDRAWAL CALCULATION

Proposed Rule Revisions, September, 2002

The following general changes are proposed regarding allocation of water for irrigation:

1. Section 2.3.2 of the Basis of Review is revised to eliminate a maximum month allocation for citrus based upon full replacement of maximum evapotranspiration loss.
2. Section 2.3.3 and Table 2-1 of the Basis of Review are revised to eliminate separate allocation coefficient multipliers for projects with surface water management systems and those without. The revised allocation coefficient multipliers are now the inverse of irrigation system efficiency.
3. County soil maps (Figures C-1 – C-15) have been updated and completely supersede Figures SCR-1 – SCR-15. In addition, these maps now show the geographic applicability of rainfall stations.
4. The tables containing crop coefficients have been updated. Table SCR-1 completely supersedes Tables C-1 and C-2.
5. The table containing rainfall and temperature data for weather stations has been completely updated to include more recent data, and additional updates are anticipated prior to formal rulemaking. Therefore, this table (SCR-2) completely supersedes the previous table (C-3). In addition, the following additions and deletions of weather stations have been made.
 - Added:
 - Archbold
 - Fort Drum
 - Immokalee
 - S-140-W
 - S-65
 - Deleted:
 - Big Cypress
 - Indiantown
 - Lake Placid
 - Orlando
 - Punta Gorda

2.3.2 Supplemental Crop Requirement

The supplemental crop requirement for individual and general permits is the amount of water needed for a particular crop beyond the amount of water provided by effective rainfall. There are several ways to determine this amount:

- A. Except as described in section B., the supplemental crop requirement for all crop types is determined using the Modified Blaney-Criddle method. This procedure estimates the potential amount of water lost to evapotranspiration and determines the supplemental crop requirement using soil moisture capacity, rainfall, and other variables. The maximum monthly and annual allocations will be based on the supplemental crop requirement for a 2-in-10 deficit effective rainfall. ~~The maximum monthly allocation for citrus crops will be based on full replacement of evapotranspiration. The annual allocation for citrus crops will be based on the supplemental crop requirement for the 2 in 10 deficit effective rainfall.~~

2.3.3 Allocation Coefficient

The allocation coefficient for individual and general permits incorporates the type of irrigation and the system's effect on the relevant water storage system as it relates to increased resource efficiency. The supplemental crop requirement will be multiplied by the net irrigated acreage and the appropriate allocation coefficient listed in Table 2- 1 in determining the allocation requirements, if the alternative allocation coefficient described in 2.3.3.1., is not utilized. ~~Irrigation projects which possess or propose a surface water management (SWM) construction and operation permit which utilizes a retention/detention system or Works of the District permit under Chapters 40E-61 or 40E-63, F.A.C., using farm pumping reduction best management practices which result in increased storage and reduced runoff, are credited as more resource efficient due to the aquifer recharge potential gained through the retention and detention of stormwater and the recycling of irrigation water. For these types of systems, the column marked "With SWM Permit" in Table 2-1 shall be used. For those systems that do not meet the criteria described above, the column marked "Without SWM Permit" in Table 2-1 shall be used.~~

**TABLE 2-1
Allocation Coefficient Multiplier Including
Credit for Resource Efficiency**

Irrigation System Type	Allocation Coefficient Multiplier	Allocation Coefficient Multiplier	
		With SWM Permit	Without SWM Permit
Micro-irrigation			
Drip	1.18	1.18	1.18
Micro-sprinkler	1.18	1.18	1.18
Overhead Sprinkler			
Linear Move	1.25	1.33	1.18
Solid Set Sprinkler	1.30	1.33	1.25
Traveling Gun	1.40	1.43	1.33
Portable Gun	1.50	1.54	1.43
Nursery Container	3.60	5.00	2.86
Subirrigation			
Seepage, Furrow	2.00	2.50	1.67
Semi-Closed Flow-Through	2.00	2.50	1.67
Crown Flooding	2.00	2.50	1.67

**WATER USE MANAGEMENT SYSTEM
DESIGN AND EVALUATION AIDS
SUPPLEMENTAL CROP REQUIREMENT
AND
WITHDRAWAL CALCULATION**

SUPPLEMENTAL CROP REQUIREMENT AND WITHDRAWAL CALCULATION

Introduction

When little or no measurements of water requirements for crops are available, the supplemental water requirement for a crop is usually estimated from climatological data and crop growth rate coefficients. For this purpose, The Water Use Division of the South Florida Water Management District uses a modified Blaney-Criddle equation to determine evapotranspiration and the Soil Conservation Service method described below to determine supplemental irrigation needs.

1.0 The Blaney-Criddle Equation

1.1 The Blaney-Criddle equation in its basic form is

$$(1) \quad U = k \sum_{1}^m p \ t / 100$$

where

U = crop evapotranspiration for a given period

k = an annual, seasonal, or monthly empirical consumptive use coefficient which varies according to the crop (see description below)

p = percent of daytime hours of the year which occur during the period

t = mean temperature for the period, in degrees Fahrenheit

m = month

1.2 The following modification has been made to the above equation:

$$(2) \quad k = k_t \times k_c$$

where

k_t = a climatic coefficient which is related to the mean air temperature; $k_t = 0.0173t - 0.314$

k_c = a coefficient reflecting the growth stage of the crop; values are shown in Tables SCR-1 ~~C1~~
~~and C2~~

2.0 The irrigation water use allocation is calculated as follows:

$$(3) \quad \text{SUP} = \text{U} - \text{RE} \text{ (d } 2/40, \text{ s)}$$

$$(4) \quad \text{Q} = (\text{SUP}/\text{EF}) \text{ SUP} \times \text{ACM} \times \text{A}$$

where

SUP = supplemental crop requirement for the growing period in inches

RE = effective rainfall, which is normalized to the design 2-in-10-year drought (d 2/40), and the soil type (s)

Q = allocation (acre inches)

~~EF = irrigation efficiency~~ ACM = Allocation Coefficient Multiplier (BOR Table 2-1)

A = irrigated acreage (acres)

2.1 Growth Coefficients

2.1.1 The crop growth coefficient used in the equations are determined as follows:

- 1) For perennial crops, ~~twelve~~ the monthly coefficients are given in ~~used~~ (Table SCR-1 C-2).
- 2) For annual crops, ~~the monthly coefficients for at certain percentages of the growing seasons of three and four months are averaged, using the values given in Table SCR-1 C-1, to determine a monthly coefficient value. For example, if a crop with a four month growing season is to be planted in September, the coefficients for 5% through 25% are averaged to give a growth coefficient for September, the coefficients for 30% through 50% are averaged to give a coefficient for October, and so on.~~

2.2 Calculation of Monthly Supplemental Crop Requirement and Allocation

2.2.1 The Water Use Division ~~uses~~ utilizes a computer program to calculate the supplemental crop water requirement used in determining an irrigation water use allocation. The program approximates equations (1) and (2) as follows:

$$(5) \quad \text{F(M)} = (\text{T(M)} \times \text{P(M)}) / 100$$

$$(6) \quad \text{AKT(M)} = (0.0173 \times \text{T(M)}) - 0.314$$

$$(7) \quad \text{AKTF(M)} = \text{F(M)} \times \text{AKT(M)}$$

$$(8) \quad \text{U(M)} = \text{AKTF(M)} \times \text{AKC(M)}$$

$$(9) \quad \text{RTI(M)} = (0.70917 \times (\text{RT(M)})^{0.82416}) - 0.11556$$

$$(10) \quad \text{UI(M)} = 10^{(0.02426 \times \text{U(M)})}$$

$$(11) \quad \text{FI} = 0.531747 + 0.295154 \times \text{D} - 0.057697 \times \text{D}^2 + 0.003804 \times \text{D}^3$$

$$(12) \quad \text{RE(M)} = \text{RTI(M)} \times \text{UI(M)} \times \text{FI}$$

$$(13) \quad \text{RE2} = \text{RE(M)} \times \text{F2}$$

where

M = month of year
 $U(M)$ = average monthly evapotranspiration
 $RT(M)$ = average monthly rainfall (Table SCR-2 C-3)
 $F(M)$ = monthly evapotranspiration factor
 $T(M)$ = average monthly temperature (Table SCR-2 C-3)
 $P(M)$ = monthly percentage of annual daylight hours (Table SCR-2 C-3)
 $RE(M)$ = monthly effective rainfall
 $RE2(M)$ = monthly effective rainfall normalized to 2-in-10 year drought
 $AKT(M) = kt$
 $AKC(M)$ = monthly crop growth coefficient (Tables SCR-1 C-1 and C-2)
 $RT1(M)$ = average monthly effective rainfall factor considering average monthly rainfall
 $UI(M)$ = average monthly effective rainfall factor considering average monthly evapotranspiration
 D = net depth of application (see Figures SCR-1 C-4 through SCR-15 C-15); ~~for small vegetables divide this number by 3~~
 FI = soil factor
 $F2$ = ratio of ~~2-in-10 year~~ design drought growing-season effective rainfall to average annual rainfall (Table SCR-2 C-3)

The locations of the geographical areas represented by the rainfall stations (Table SCR-2) used to determine the average monthly rainfall $RT(M)$, average monthly temperature $T(M)$, and monthly percentage of annual daylight hours $P(M)$ are shown in Figures SCR-1 through SCR-15.

2.2.2 Equation (3) is solved for each month of the year for perennial crops, or for each month of the growing season for annual crops. The largest monthly difference between evapotranspiration and design drought effective rainfall is the basis of the maximum month allocation and the total of the monthly differences between evapotranspiration and design drought effective rainfall is the basis of the annual allocation. The maximum month and annual differences are multiplied by the Allocation Coefficient Multiplier (BOR Table 2-1) to determine the overall crop requirement then and the largest monthly difference between evapotranspiration and 2 in 10 year effective rainfall is the basis of the allocation. The difference is divided by irrigation efficiency to determine the overall crop requirement in inches, and is multiplied by the crop acreage to give an allocation, equation (4).

3.0 Additional information

Additional, detail on this method may be found in "Irrigation Water Requirements," Technical Release No. 21, USDA, Soil Conservation Service, Engineering Division, 1970.

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TABLE SCR-1: Growth Coefficients for Crops

Monthly Coefficients for Perennial Crops												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVOCADO	0.27	0.42	0.58	0.70	0.78	0.81	0.77	0.71	0.63	0.54	0.43	0.30
CITRUS	0.63	0.66	0.68	0.70	0.71	0.71	0.71	0.71	0.70	0.68	0.67	0.64
SUGARCANE	0.39	0.30	0.53	0.61	0.70	0.79	0.79	0.84	0.73	0.88	0.72	0.69
GRAPES	0.20	0.24	0.38	0.60	0.71	0.80	0.80	0.76	0.61	0.50	0.35	0.23
TURF GRASS	0.49	0.57	0.73	0.85	0.90	0.92	0.92	0.91	0.87	0.79	0.67	0.55
PASTURE	0.46	0.60	0.63	0.68	0.70	0.53	0.56	0.58	0.52	0.53	0.49	0.44

Monthly Coefficients for Annual Crops

	Three-Month Growing Season			Four-Month Growing Season			
	Month of Growing Season			Month of Growing Season			
	1	2	3	1	2	3	4
DRY BEANS	0.73	1.08	0.81	0.66	1.02	1.06	0.75
WINTER WHEAT	0.40	0.81	1.18	0.35	0.65	0.97	1.22
SURGHUM	0.54	1.01	0.70	0.43	0.99	0.93	0.65
GREEN BEAN	0.61	0.91	1.10	0.58	0.79	1.01	1.11
GRAIN CORN	0.59	1.02	0.96	0.54	0.90	1.06	0.93
SILAGE CORN	0.55	0.97	1.03	0.51	0.81	1.06	1.02
SWEET CORN	0.60	1.02	1.04	0.55	0.90	1.07	1.03
MELONS	0.56	0.79	0.72	0.52	0.75	0.79	0.71
PEAS	0.72	1.09	1.03	0.66	1.01	1.11	1.01
POTATO	0.54	1.18	1.32	0.46	0.96	1.33	1.30
SOYBEANS	0.33	0.77	0.84	0.30	0.56	0.96	0.79
TOMATO	0.50	0.93	0.84	0.47	0.76	1.00	0.80
SMALL VEGETABLES	0.54	0.81	0.62	0.48	0.77	0.81	0.57

Table SCR-2 Rainfall Stations

STATION: ARCHBOLD

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.91	2.20	3.11	2.33	4.27	7.80	6.94	7.15	6.80	3.24	1.63	1.64
Mean Temperature (F)	60.61	61.97	66.39	70.40	75.65	79.37	80.42	80.94	79.60	74.37	68.40	62.65
Annual Daylight (%)	7.43	7.09	8.38	8.66	9.42	9.35	9.54	9.15	8.32	8.04	7.31	7.31

Temperature based on 29 years of data, rainfall based on 68 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 37.2 inches

STATION: AVON PARK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.24	2.51	2.82	2.52	4.12	8.27	8.03	7.50	7.15	3.59	1.71	1.76
Mean Temperature (F)	61.74	63.41	67.61	72.20	77.06	80.63	81.90	82.00	80.47	74.97	68.17	63.29
Annual Daylight (%)	7.42	7.08	8.37	8.67	9.44	9.37	9.56	9.16	8.32	8.03	7.3	7.29

Temperature based on 67 years of data, rainfall based on 93 years of data

Factor for conversion of average rainfall to drought rainfall = 0.84

Rainfall for 1-in-10 level of certainty = 40.3 inches

STATION: BELLE GLADE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.20	1.89	3.02	2.85	4.85	8.65	7.81	7.95	7.98	4.34	2.22	1.72
Mean Temperature (F)	63.00	63.83	67.55	70.60	75.29	78.93	80.32	80.68	79.43	74.94	68.87	64.32
Annual Daylight (%)	7.46	7.11	8.38	8.65	9.4	9.32	9.52	9.13	8.32	8.05	7.33	7.34

Temperature based on 68 years of data, rainfall based on 72 years of data

Factor for conversion of average rainfall to drought rainfall = 0.84

Rainfall for 1-in-10 level of certainty = 42.6 inches

STATION: CLEWISTON

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.08	1.98	2.37	2.39	4.27	7.20	6.28	6.38	5.92	3.46	1.93	1.67
Mean Temperature (F)	63.52	65.00	69.10	73.20	77.29	80.43	81.84	82.00	81.17	76.58	70.57	65.26
Annual Daylight (%)	7.45	7.1	8.38	8.66	9.4	9.33	9.52	9.13	8.32	8.04	7.33	7.33

Temperature based on 50 years of data, rainfall based on 46 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 34.4 inches

Table SCR-2 Rainfall Stations

STATION: EVERGLADES

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.73	1.63	2.11	2.20	4.28	9.89	8.06	7.70	8.80	4.07	1.48	1.47
Mean Temperature (F)	65.10	66.03	69.39	73.17	76.94	80.30	81.77	82.00	81.50	77.29	71.23	66.74
Annual Daylight (%)	7.49	7.12	8.38	8.64	9.37	9.29	9.49	9.11	8.32	8.06	7.36	7.37

Temperature based on 67 years of data, rainfall based on 57 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 40.6 inches

STATION: FORT DRUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.05	2.72	3.39	2.16	4.67	7.52	7.46	6.80	6.48	3.92	1.79	1.78
Mean Temperature (F)	61.77	62.90	66.84	70.77	75.48	79.23	81.00	81.00	79.63	74.61	68.57	63.00
Annual Daylight (%)	7.41	7.08	8.37	8.67	9.44	9.37	9.56	9.16	8.32	8.03	7.29	7.29

Temperature based on 50 years of data, rainfall based on 50 years of data

Factor for conversion of average rainfall to drought rainfall = 0.85

Rainfall for 1-in-10 level of certainty = 40.5 inches

STATION: FT. LAUDERDALE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.86	2.52	2.90	4.12	6.28	9.02	6.39	6.90	8.21	8.40	3.96	2.52
Mean Temperature (F)	66.81	67.62	70.71	74.27	77.94	80.90	82.00	82.26	81.37	77.77	72.63	68.42
Annual Daylight (%)	7.49	7.12	8.38	8.64	9.37	9.29	9.49	9.11	8.32	8.06	7.36	7.37

Temperature based on 50 years of data, rainfall based on 83 years of data

Factor for conversion of average rainfall to drought rainfall = 0.82

Rainfall for 1-in-10 level of certainty = 47.5 inches

STATION: FT. MYERS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.96	2.10	2.88	1.95	3.68	9.36	8.79	8.59	8.29	3.45	1.46	1.56
Mean Temperature (F)	64.03	65.10	68.87	73.13	77.97	81.23	82.53	82.90	81.60	76.58	69.83	65.29
Annual Daylight (%)	7.46	7.11	8.38	8.65	9.4	9.32	9.52	9.13	8.32	8.05	7.33	7.34

Temperature based on 50 years of data, rainfall based on 57 years of data

Factor for conversion of average rainfall to drought rainfall = 0.84

Rainfall for 1-in-10 level of certainty = 41.5 inches

Table SCR-2 Rainfall Stations

STATION: FT. PIERCE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.48	2.77	3.23	3.08	4.29	5.98	5.66	5.82	8.03	6.72	2.95	2.07
Mean Temperature (F)	63.29	64.31	67.94	72.00	76.42	79.77	81.00	81.35	80.30	75.97	69.80	64.94
Annual Daylight (%)	7.42	7.09	8.38	8.66	9.43	9.36	9.55	9.15	8.32	8.03	7.3	7.3

Temperature based on 67 years of data, rainfall based on 96 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 40.5 inches

STATION: HIALEAH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.28	2.11	2.70	3.70	6.37	9.31	7.07	8.25	8.98	7.39	3.52	1.85
Mean Temperature (F)	66.42	67.55	71.03	74.30	77.97	80.80	82.00	82.16	81.30	77.39	72.20	67.77
Annual Daylight (%)	7.49	7.12	8.38	8.64	9.37	9.29	9.49	9.11	8.32	8.06	7.36	7.37

Temperature based on 50 years of data, rainfall based on 56 years of data

Factor for conversion of average rainfall to drought rainfall = 0.81

Rainfall for 1-in-10 level of certainty = 47.0 inches

STATION: HOMESTEAD

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.72	1.86	2.29	3.18	6.73	9.39	7.95	8.27	10.27	7.18	2.15	1.35
Mean Temperature (F)	65.77	67.45	69.81	72.50	76.52	80.03	81.45	82.00	81.07	77.45	71.93	67.29
Annual Daylight (%)	7.52	7.13	8.39	8.63	9.35	9.26	9.47	9.09	8.31	8.07	7.38	7.4

Temperature based on 49 years of data, rainfall based on 72 years of data

Factor for conversion of average rainfall to drought rainfall = 0.84

Rainfall for 1-in-10 level of certainty = 48.2 inches

STATION: HYPOLUXO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	3.10	2.73	3.46	3.45	5.26	8.29	5.75	6.57	7.78	7.73	3.81	2.61
Mean Temperature (F)	65.84	66.69	70.10	73.63	77.81	80.77	82.29	82.55	81.30	77.45	71.87	67.35
Annual Daylight (%)	7.46	7.11	8.38	8.65	9.4	9.32	9.52	9.13	8.32	8.05	7.33	7.34

Temperature based on 50 years of data, rainfall based on years of data

Factor for conversion of average rainfall to drought rainfall = 0.81

Rainfall for 1-in-10 level of certainty = 44.4 inches

Table SCR-2 Rainfall Stations

STATION: IMMOKALEE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.14	2.26	3.09	2.23	4.23	8.61	7.48	7.35	6.71	2.90	1.95	1.51
Mean Temperature (F)	64.03	65.24	68.77	71.87	76.74	80.10	81.26	81.74	80.67	76.00	67.20	65.45
Annual Daylight (%)	7.48	7.12	8.38	8.64	9.38	9.30	9.50	9.12	9.32	8.06	7.35	7.36

Temperature based on 28 years of data, rainfall based on 37 years of data

Factor for conversion of average rainfall to drought rainfall = 0.82

Rainfall for 1-in-10 level of certainty = 37.9 inches

STATION: JUPITER

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	3.41	2.94	4.27	3.07	5.55	7.59	5.41	6.78	8.44	8.42	3.61	2.47
Mean Temperature (F)	64.84	65.69	69.26	72.97	76.97	80.17	81.68	82.06	81.20	76.90	71.10	66.61
Annual Daylight (%)	7.44	7.1	8.38	8.66	9.41	9.34	9.53	9.14	8.32	8.04	7.32	7.32

Temperature based on 50 years of data, rainfall based on 97 years of data

Factor for conversion of average rainfall to drought rainfall = 0.81

Rainfall for 1-in-10 level of certainty = 45.1 inches

STATION: KISSIMMEE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.12	2.67	3.31	2.49	3.90	6.97	7.46	6.76	6.49	3.27	1.96	2.08
Mean Temperature (F)	60.94	62.38	66.65	71.20	76.19	80.30	81.65	81.84	80.07	74.77	67.93	62.48
Annual Daylight (%)	7.39	7.06	8.37	8.68	9.47	9.4	9.59	9.18	8.32	8.01	7.27	7.26

Temperature based on 50 years of data, rainfall based on 94 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 37.7 inches

STATION: LA BELLE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.00	2.15	3.14	2.49	4.34	9.35	8.14	7.73	7.07	3.74	1.67	1.65
Mean Temperature (F)	62.94	64.62	68.23	72.27	77.10	80.33	81.16	81.77	80.43	75.42	68.97	64.65
Annual Daylight (%)	7.45	7.1	8.38	8.66	9.4	9.33	9.52	9.13	8.32	8.04	7.33	7.33

Temperature based on 50 years of data, rainfall based on years of data

Factor for conversion of average rainfall to drought rainfall = 0.86

Rainfall for 1-in-10 level of certainty = 42.7 inches

Table SCR-2 Rainfall Stations

STATION: LOXAHATCHEE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.59	2.38	3.33	2.99	5.52	8.95	7.94	7.32	9.71	6.44	3.18	2.21
Mean Temperature (F)	63.00	63.83	67.55	70.60	75.29	78.93	80.32	80.68	79.43	74.94	68.87	64.32
Annual Daylight (%)	7.46	7.11	8.38	8.65	9.4	9.32	9.52	9.13	8.32	8.05	7.33	7.34

Temperature based on 68 years of data, rainfall based on 47 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 47.9 inches

STATION: MIAMI

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.02	2.06	2.08	3.13	6.35	7.84	5.44	6.29	8.30	8.38	2.80	2.05
Mean Temperature (F)	67.35	68.48	71.65	75.13	78.74	81.23	82.68	82.84	81.67	78.10	73.13	68.87
Annual Daylight (%)	7.5	7.13	8.38	8.63	9.36	9.28	9.48	9.13	8.32	8.07	7.37	7.38

Temperature based on 50 years of data, rainfall based on 79 years of data

Factor for conversion of average rainfall to drought rainfall = 0.78

Rainfall for 1-in-10 level of certainty = 39.7 inches

STATION: MOORE HAVEN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.87	2.07	2.92	2.41	4.26	7.65	7.02	6.59	6.94	3.46	1.71	1.63
Mean Temperature (F)	62.71	63.86	67.81	71.87	76.48	80.00	81.32	81.71	80.50	75.61	69.00	64.26
Annual Daylight (%)	7.44	7.1	8.38	8.66	9.41	9.34	9.53	9.14	8.32	8.04	7.32	7.32

Temperature based on 67 years of data, rainfall based on 58 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 37.6 inches

STATION: NAPLES

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.92	1.95	2.25	2.05	4.14	8.30	8.28	8.05	8.71	3.95	1.59	1.35
Mean Temperature (F)	64.97	65.93	69.39	73.00	77.26	80.57	81.87	82.00	81.53	77.03	71.20	66.55
Annual Daylight (%)	7.49	7.12	8.38	8.64	9.37	9.29	9.49	9.11	8.32	8.06	7.36	7.37

Temperature based on 50 years of data, rainfall based on 55 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 39.7 inches

Table SCR-2 Rainfall Stations

STATION: OKEECHOBEE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.76	2.19	2.89	2.78	4.29	7.35	6.55	6.65	6.37	4.10	1.91	1.58
Mean Temperature (F)	62.03	63.93	67.84	72.13	76.81	80.17	81.61	81.71	80.47	75.35	69.13	63.65
Annual Daylight (%)	7.43	7.09	8.38	8.66	9.42	9.35	9.54	9.15	8.32	8.04	7.31	7.31

Temperature based on 50 years of data, rainfall based on 73 years of data

Factor for conversion of average rainfall to drought rainfall = 0.82

Rainfall for 1-in-10 level of certainty = 36.3 inches

STATION: POMPANO BEACH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.71	2.14	2.94	3.60	5.98	7.75	6.41	6.73	7.99	7.71	3.60	2.30
Mean Temperature (F)	66.90	67.55	70.77	74.30	77.68	80.53	82.03	82.42	81.10	77.39	72.40	68.03
Annual Daylight (%)	7.48	7.12	8.38	8.64	9.38	9.3	9.5	9.12	8.32	8.06	7.35	7.36

Temperature based on 50 years of data, rainfall based on 55 years of data

Factor for conversion of average rainfall to drought rainfall = 0.82

Rainfall for 1-in-10 level of certainty = 44.8 inches

STATION: STUART

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.56	2.75	3.78	2.84	4.98	6.74	6.43	5.89	8.09	6.92	3.17	2.64
Mean Temperature (F)	64.84	65.69	69.26	72.97	76.97	80.17	81.68	82.06	81.20	76.90	71.10	66.61
Annual Daylight (%)	7.44	7.1	8.38	8.66	9.42	9.35	9.54	9.14	8.32	8.04	7.32	7.31

Temperature based on 50 years of data, rainfall based on 60 years of data

Factor for conversion of average rainfall to drought rainfall = 0.81

Rainfall for 1-in-10 level of certainty = 41.8 inches

STATION: S-65

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.18	2.91	3.05	2.20	4.39	7.90	7.70	6.58	6.30	3.30	2.14	1.84
Mean Temperature (F)	61.03	62.72	67.00	71.60	76.77	80.23	81.16	81.48	79.97	74.10	67.17	62.16
Annual Daylight (%)	7.41	7.08	8.37	8.67	9.44	9.37	9.56	9.16	8.32	8.03	7.29	7.29

Temperature based on 50 years of data, rainfall based on 30 years of data

Factor for conversion of average rainfall to drought rainfall = 0.85

Rainfall for 1-in-10 level of certainty = 39.9 inches

Table SCR-2 Rainfall Stations

STATION: S 140 W

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.03	1.67	2.36	2.33	4.27	8.38	5.72	6.71	5.48	2.47	1.93	1.38
Mean Temperature (F)	66.71	68.34	70.45	73.73	78.16	82.07	83.90	84.00	83.37	79.23	74.00	68.65
Annual Daylight (%)	7.50	7.12	8.38	8.64	9.36	9.28	9.48	9.13	8.32	8.06	7.37	7.38

Temperature based on 20 years of data, rainfall based on 23 years of data

Factor for conversion of average rainfall to drought rainfall = 0.80

Rainfall for 1-in-10 level of certainty = 32.3 inches

STATION: TAMiami 4

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	1.67	1.56	1.99	2.73	5.44	9.35	8.06	7.26	8.20	4.72	2.02	1.19
Mean Temperature (F)	66.94	67.72	70.65	73.53	77.48	80.93	82.77	83.06	82.23	78.55	73.00	68.23
Annual Daylight (%)	7.5	7.12	8.38	8.64	9.36	9.28	9.48	9.13	8.32	8.06	7.37	7.38

Temperature based on 50 years of data, rainfall based on 56 years of data

Factor for conversion of average rainfall to drought rainfall = 0.83

Rainfall for 1-in-10 level of certainty = 41.5 inches

STATION: WEST PALM BEACH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall	2.77	2.54	3.38	3.52	5.65	7.97	6.32	6.73	8.81	6.86	3.90	2.52
Mean Temperature (F)	65.84	66.69	70.10	73.63	77.81	80.77	82.29	82.55	81.30	77.45	71.87	67.35
Annual Daylight (%)	7.47	7.11	8.38	8.65	9.39	9.32	9.51	9.12	8.32	8.05	7.34	7.34

Temperature based on 50 years of data, rainfall based on 58 years of data

Factor for conversion of average rainfall to drought rainfall = 0.80

Rainfall for 1-in-10 level of certainty = 44.3 inches

R35

R36

R37

R38

R39

R40

R41

R42

T48

T49

T50

T51

S140W

POMPAÑO
BEACHFORT
LAUDERDALE

HIALEAH

BROWARD COUNTY

*Pompano Beach, S140W,
Ft. Lauderdale, and Hialeah
Rain Stations*

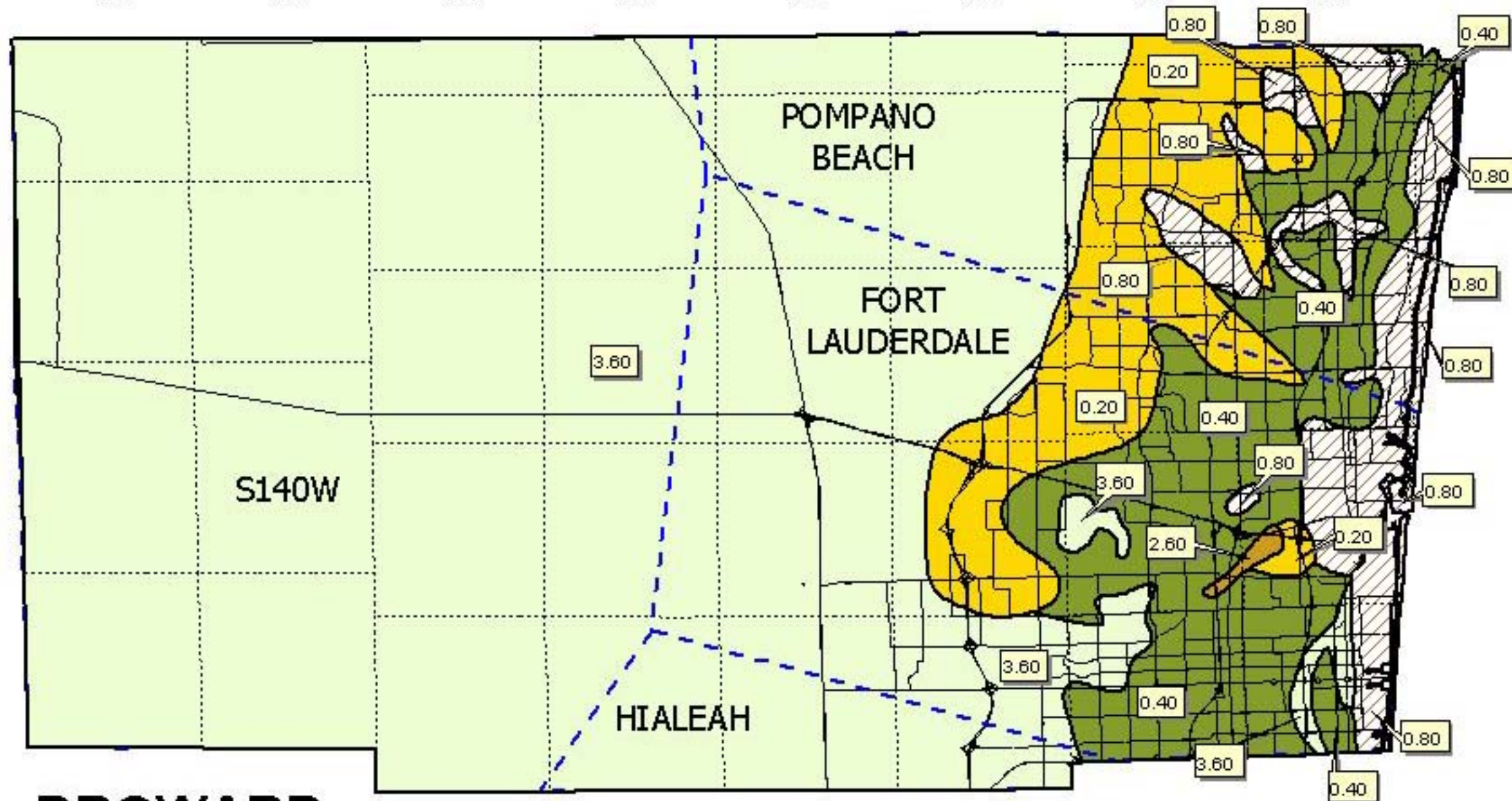
----- Rainfall Polygon Boundary

0 5 Miles



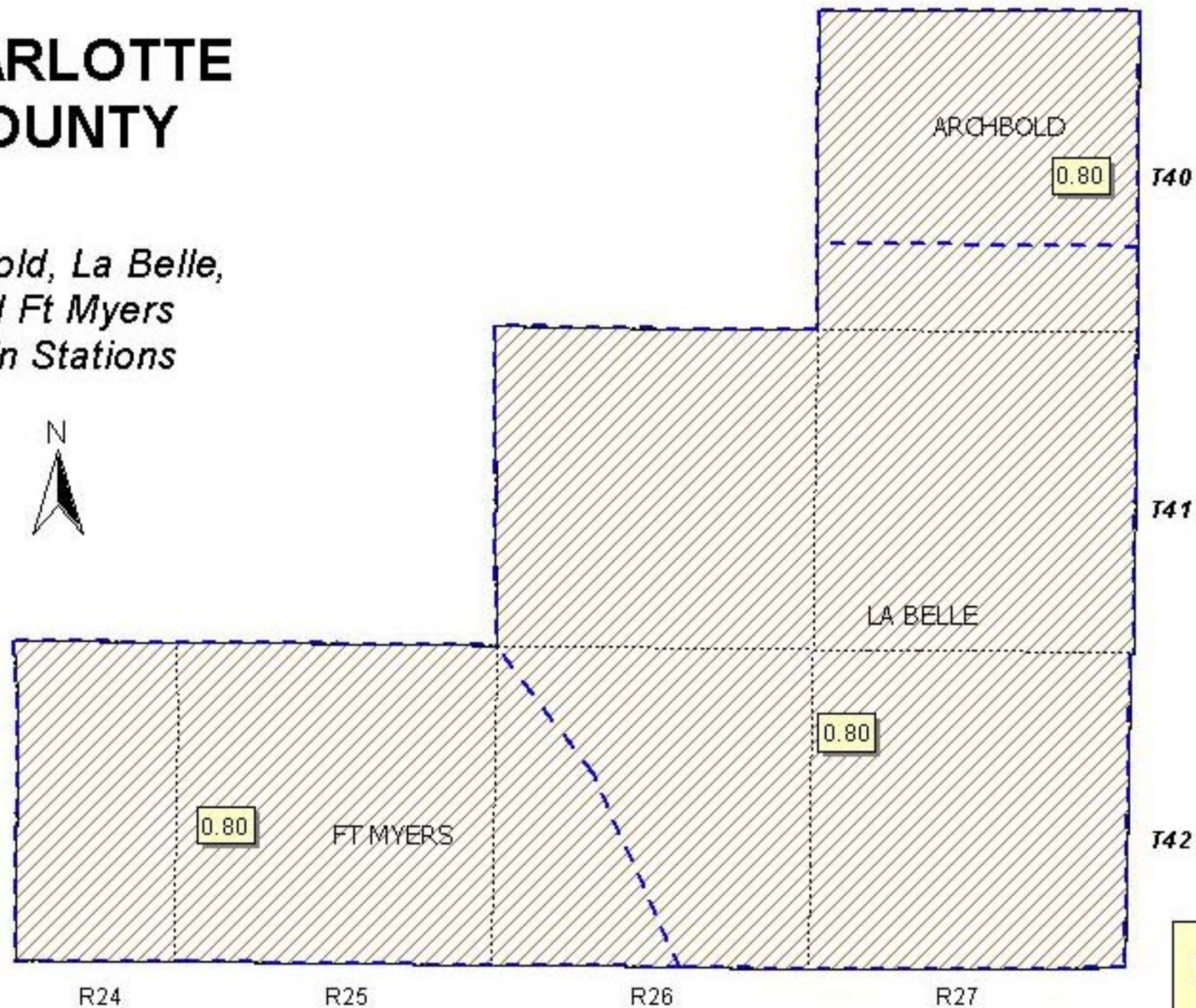
**Net Depth of
Application**

Figure SCR-1



CHARLOTTE COUNTY

*Archbold, La Belle,
and Ft Myers
Rain Stations*



----- Rainfall Polygon Boundary

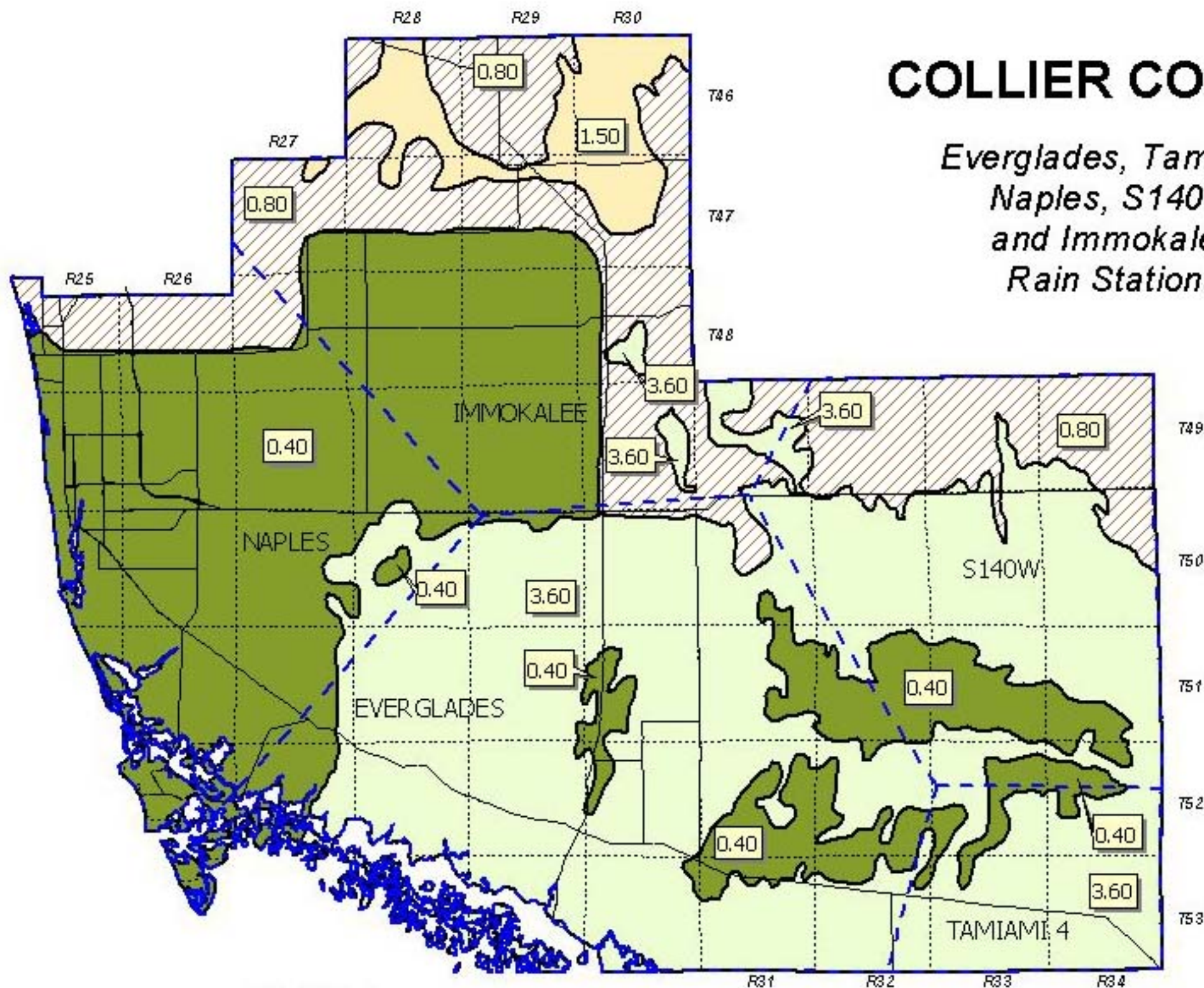
0 5 Miles

**Net Depth of
Application**

Figure SCR-2

COLLIER COUNTY

*Everglades, Tamiami,
Naples, S140W
and Immokalee
Rain Stations*



**Net Depth of
Application**

Figure SCR-3

GLADES COUNTY

*La Belle, Moore Haven,
Clewiston, Archbold,
and Okeechobee
Rain Stations*

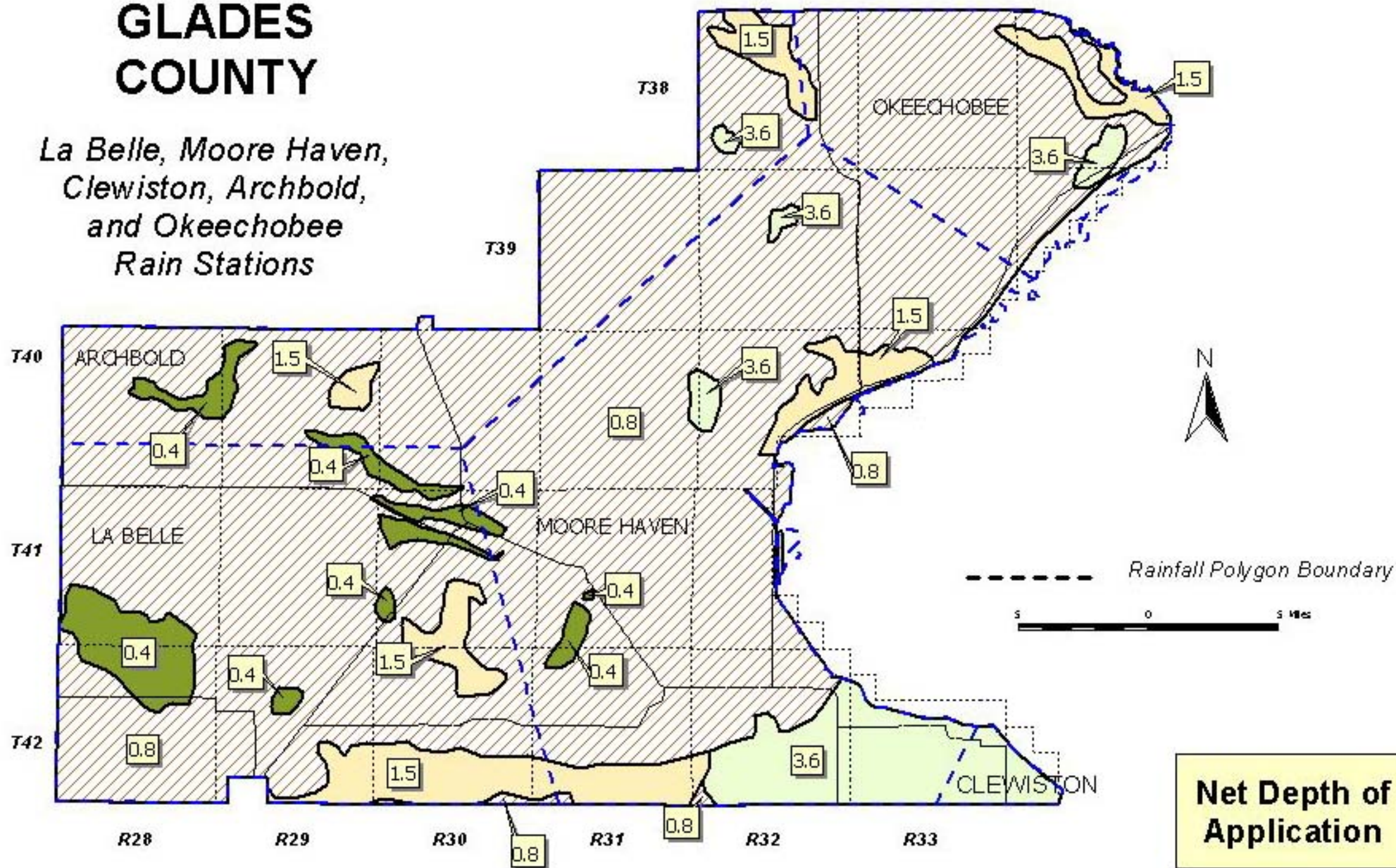


Figure SCR-4

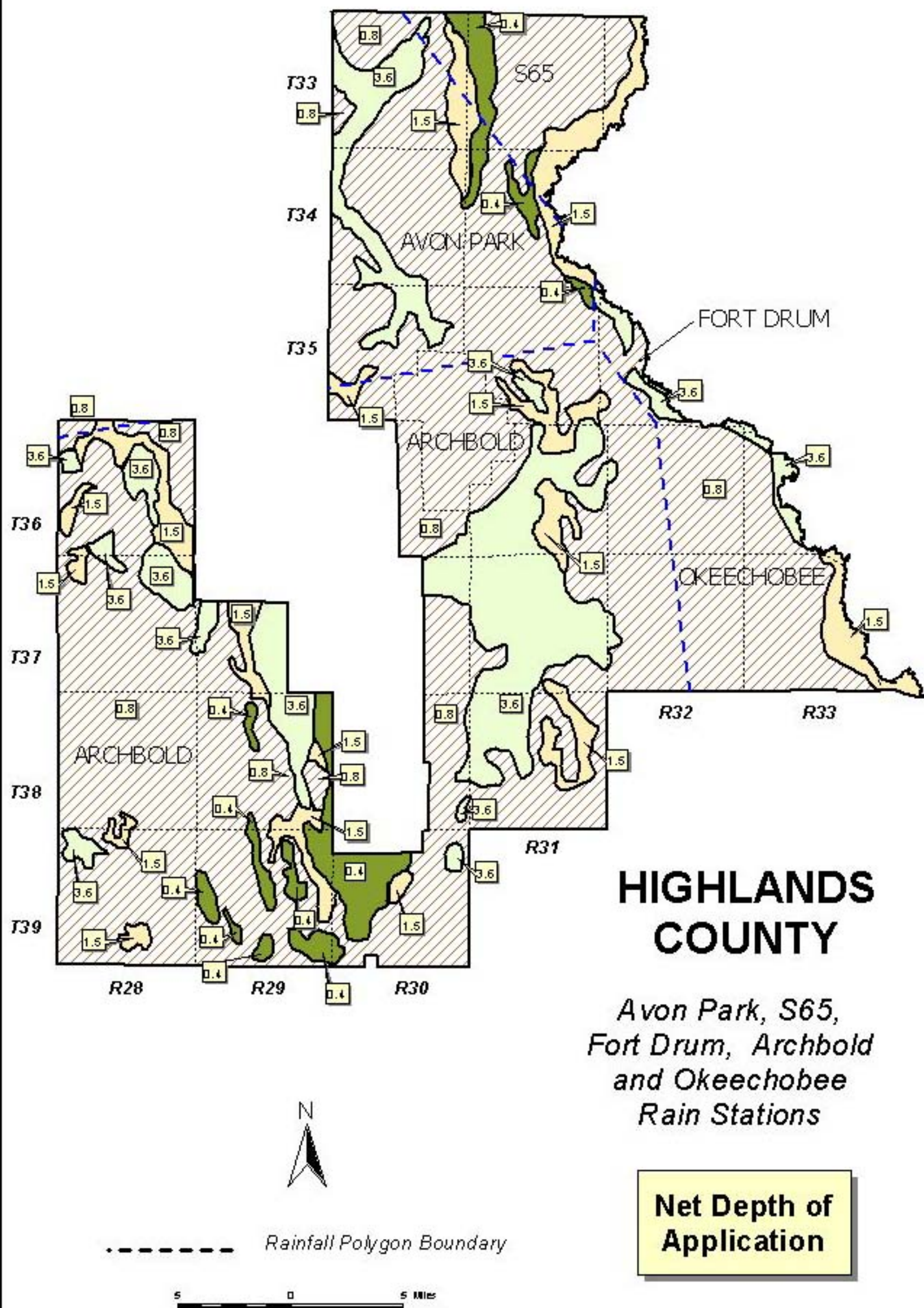


Figure SCR-6

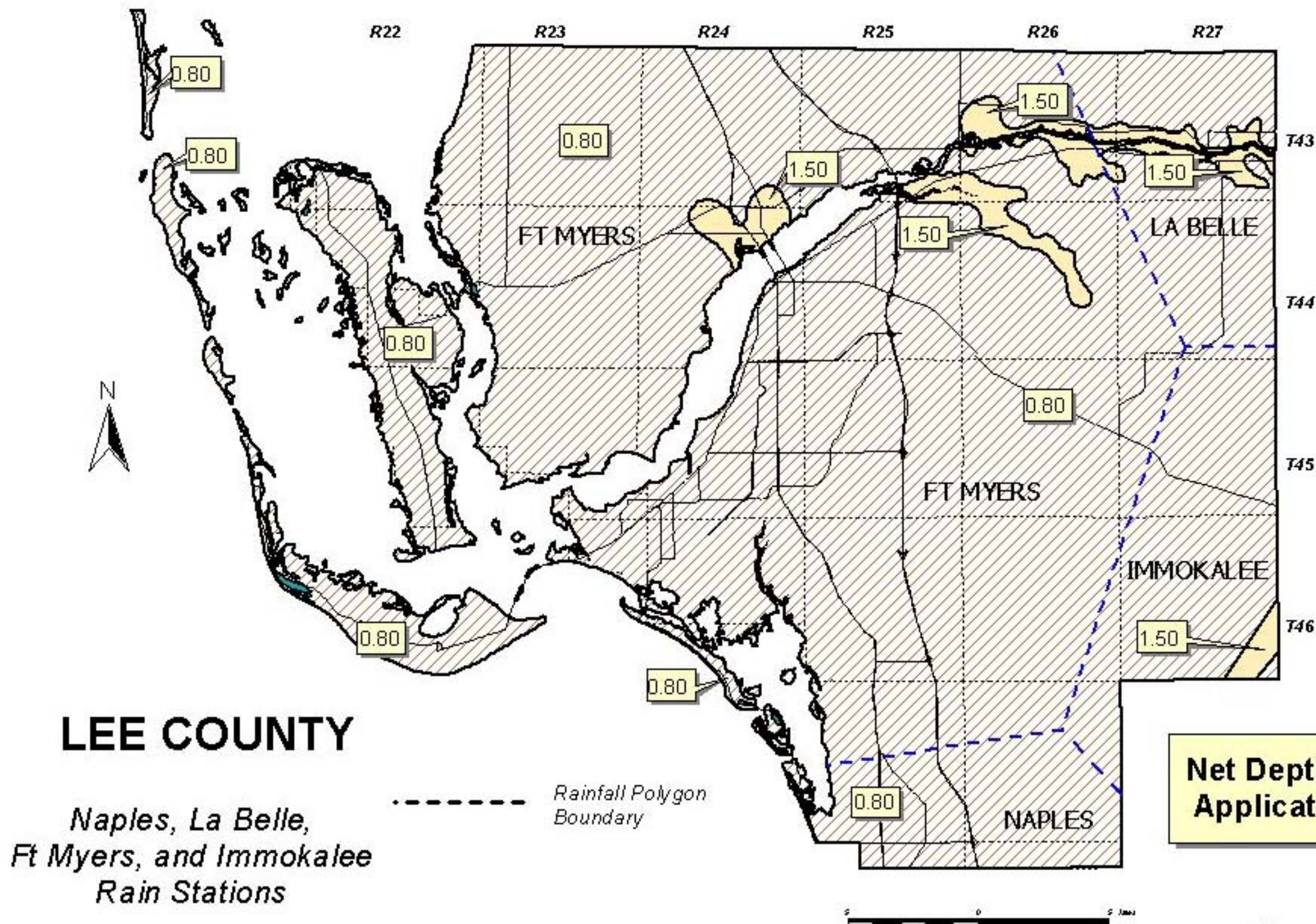


Figure SCR-7

MARTIN COUNTY

Belle Glade, Stuart, Jupiter, and Okeechobee Rain Stations

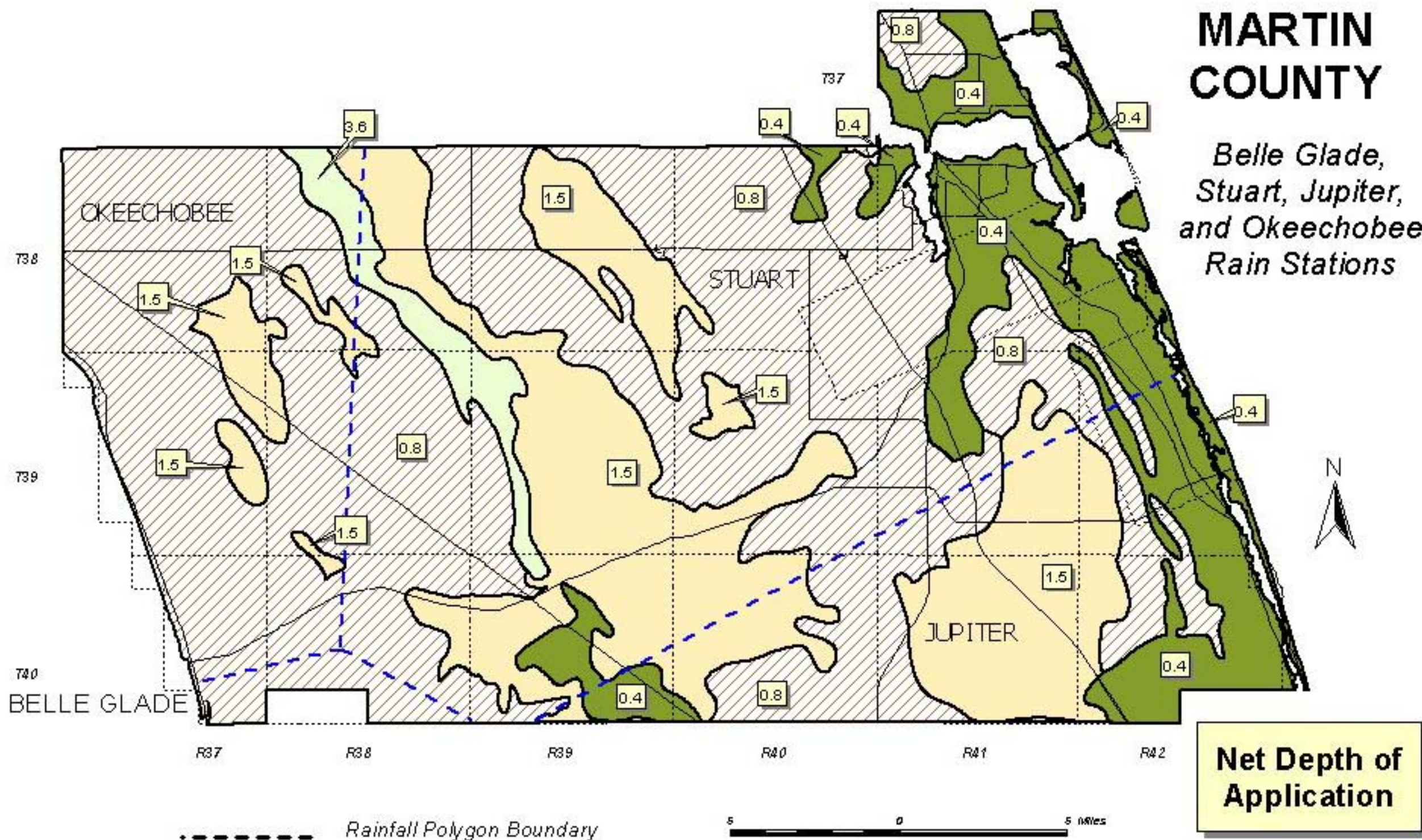


Figure SCR-8

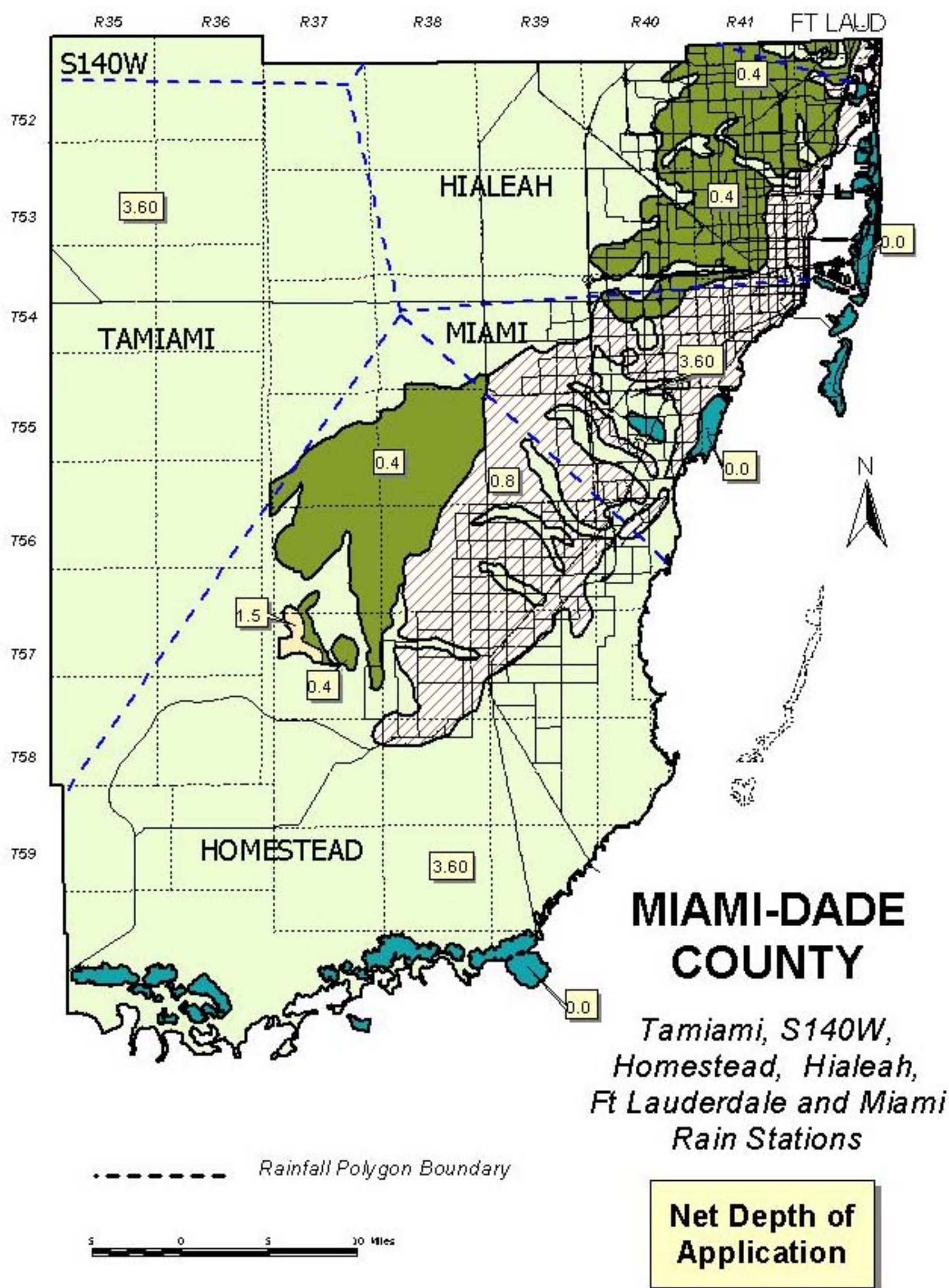


Figure SCR-9

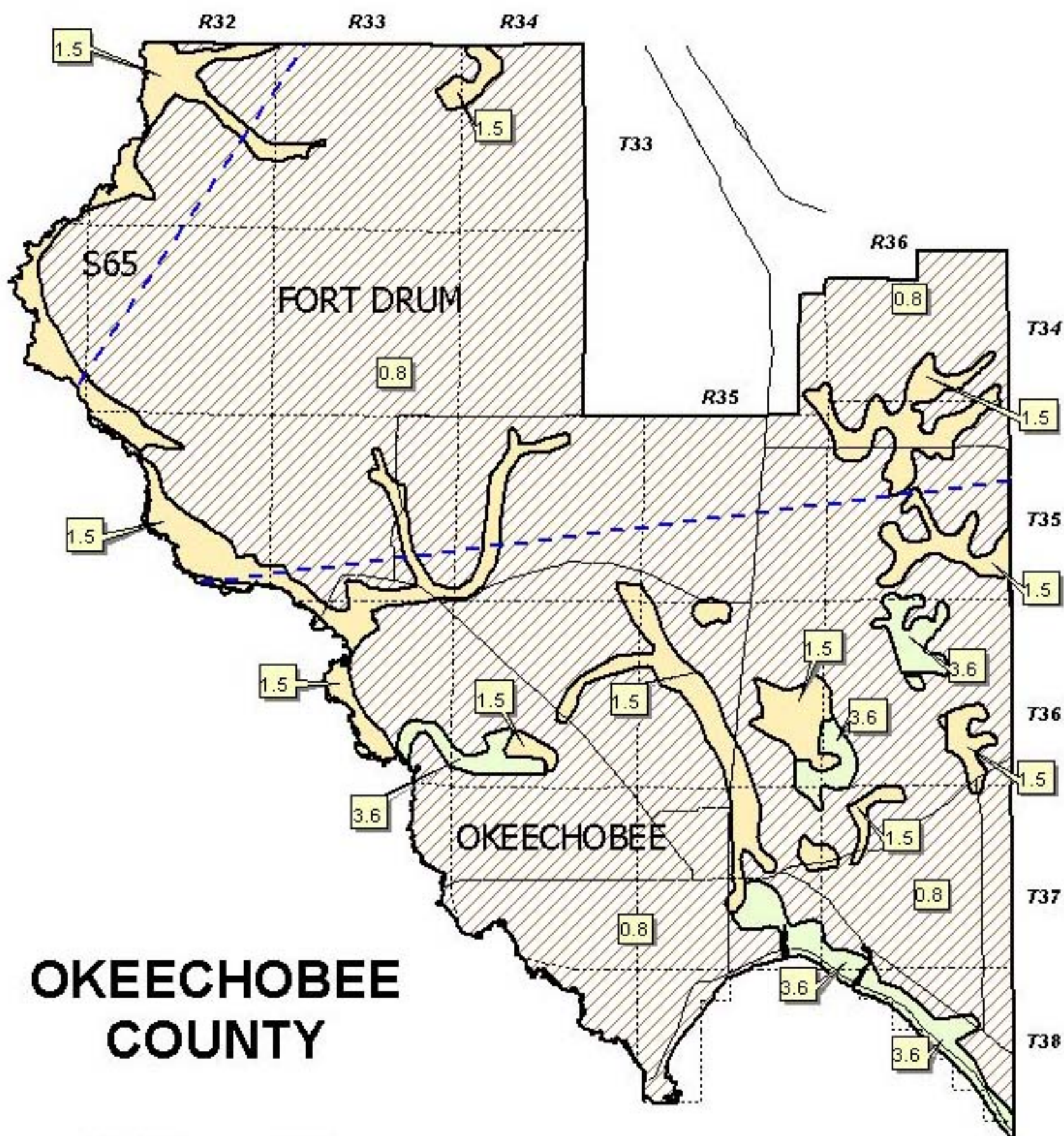


Figure SCR-10

Kissimmee,
Rain Station



Figure S CR-11

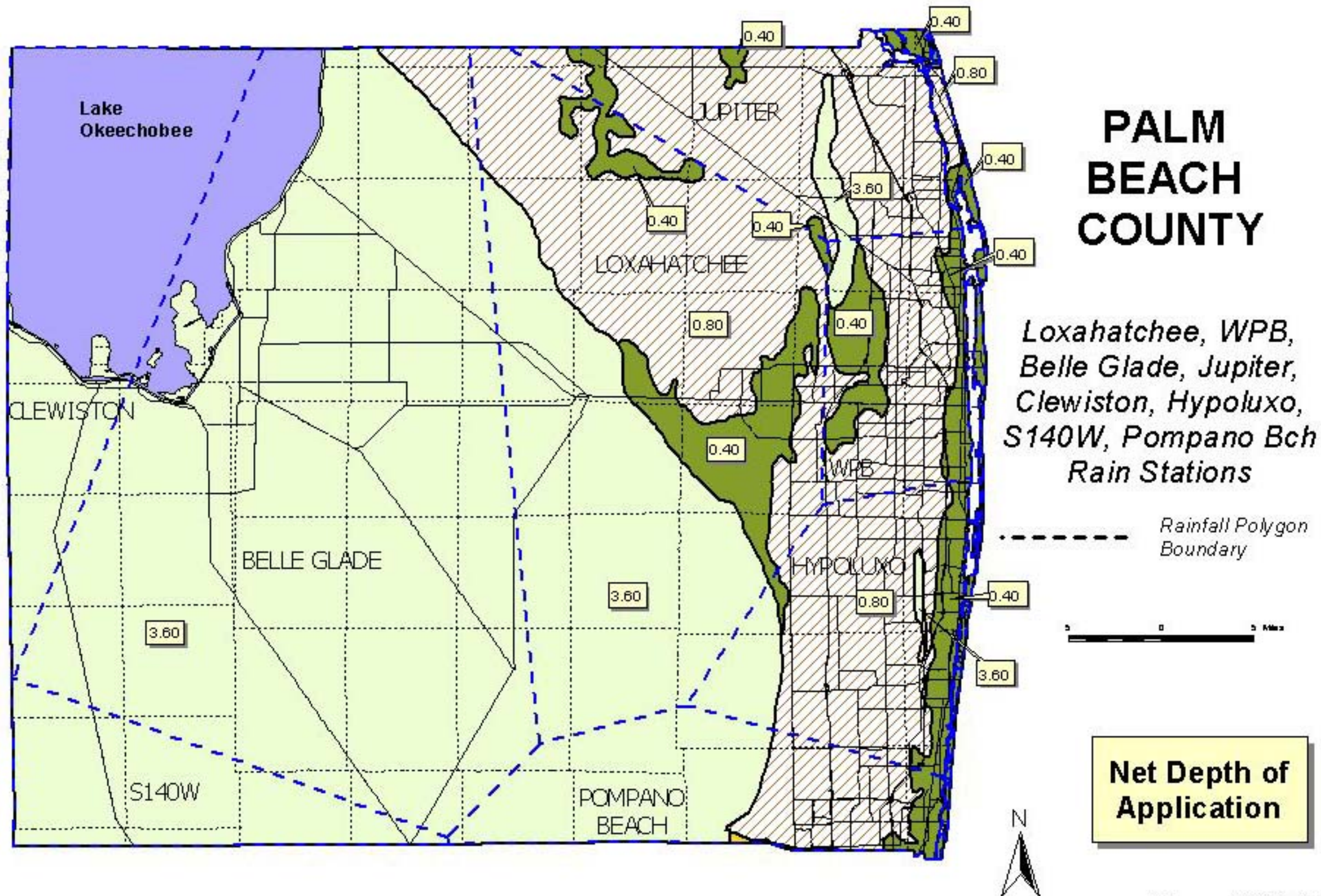
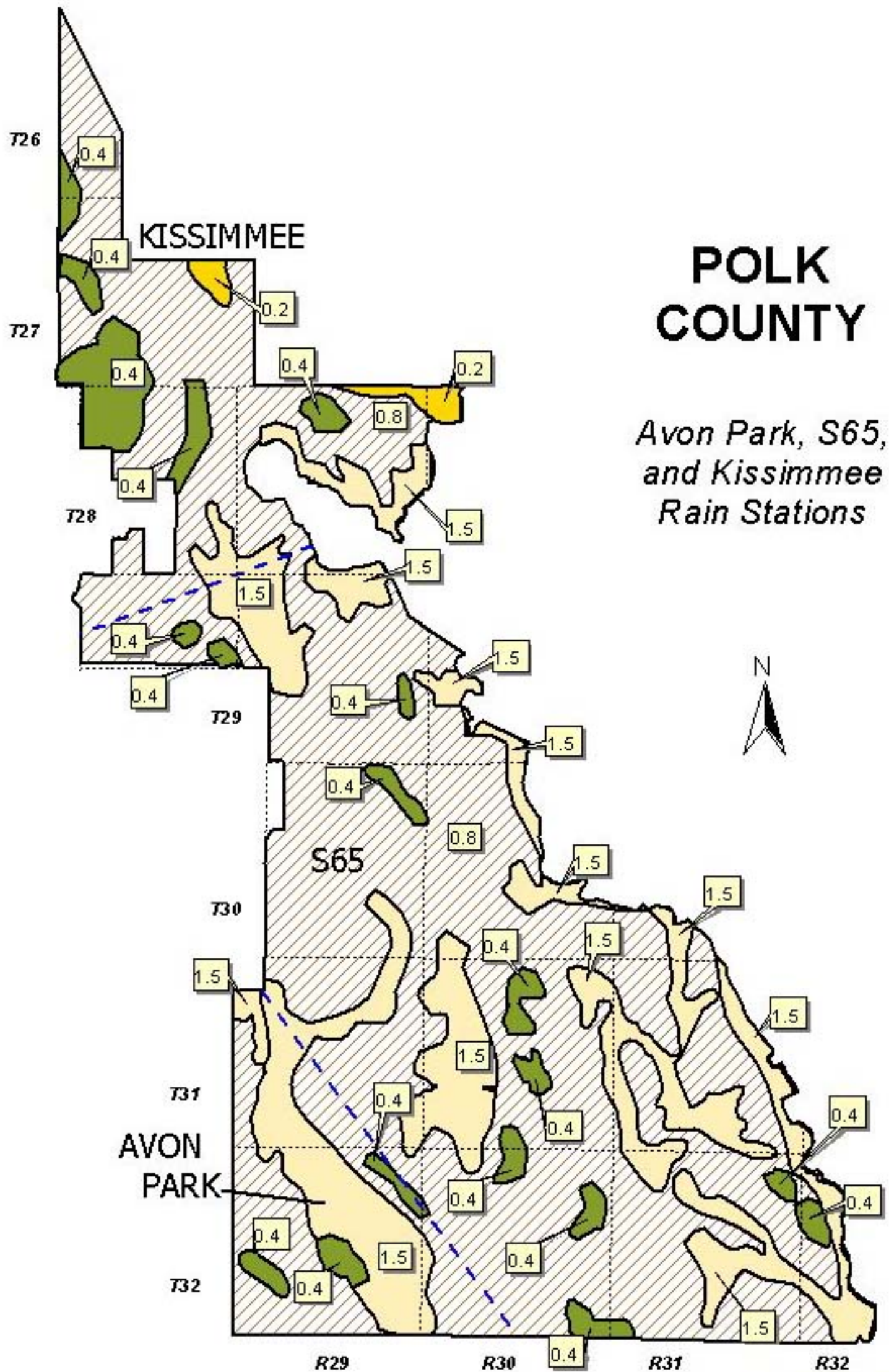


Figure SCR-13



**Net Depth of
Application**

Figure SCR-14

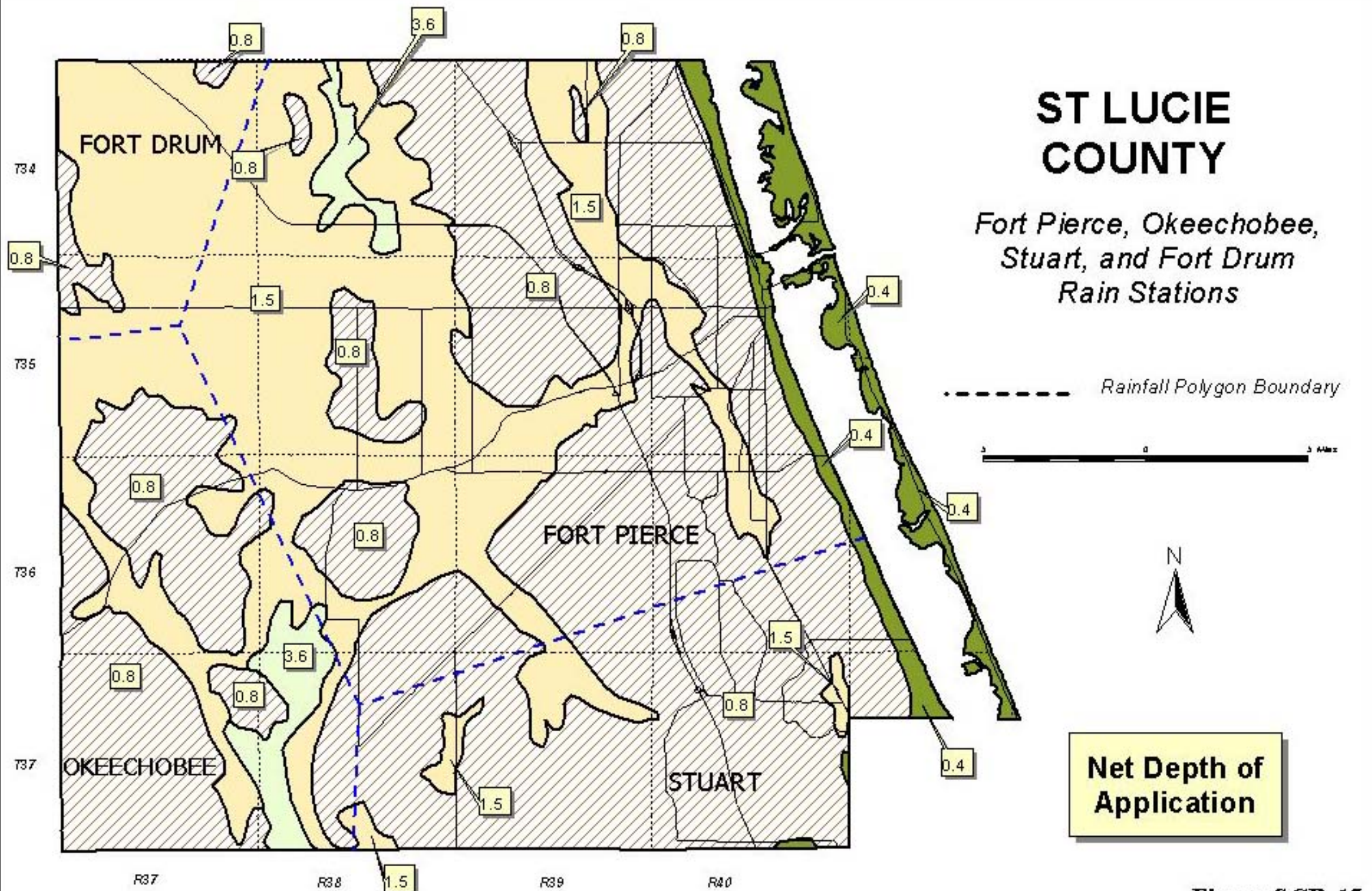


Figure SCR-15